Gulfport School District

Botany

Curriculum and Pacing Guide

2011-2012

Content Strands: Inquiry (I) and Life Science (L)			
QTR	**Competency/Objective**		**QTR**
	Apply inquiry-based and problem-solving processes and skills to scientific investigations. (I) and (L)		
1.1-1.2	1a	Conduct a scientific investigation demonstrating safe procedures and proper care of laboratory equipment. (DOK 2) 1. Safety rules and symbols 2. Proper use and care of the compound light microscope, slides, chemicals, etc. 3. Accuracy and precision in using graduated cylinders, balances, beakers, thermometers, and rulers	
1.1-1.2	1b	Formulate questions that can be answered through research and experimental design. (DOK 3)	
1.1-1.2	1c	Apply the components of scientific processes and methods in classroom and laboratory investigations (e.g., hypotheses, experimental design, observations, data analyses, interpretations, theory development). (DOK 3)	
1.1-1.2	1d	Construct and analyze graphs (e.g., plotting points, labeling x-and y-axis, creating appropriate titles and legends for circle, bar, and line graphs). (DOK 2)	
1.1-1.2	1e	Analyze procedures, data, and conclusions to determine the scientific validity of research. (DOK 3)	
1.1-1.2	1f	Recognize and analyze alternative explanations for experimental results and to make predictions based on observations and prior knowledge. (DOK 3)	
1.1-1.2	1g	Communicate and defend a scientific argument in oral, written, and graphic form. (DOK 3)	
	Distinguish among the characteristics of botanical organization, structure, and function. (L)		
1.1	2a	Relate plant cell structures to their functions (e.g., major organelles, cell wall components, photosynthetic chemical reactions, plant pigments, plant tissues, roots, stems, leaves, flowers). (DOK 1)	
1.1	2b	Differentiate the characteristics found in various plant divisions. (DOK 2) 1. Differences and similarities of nonvascular plants 2. Characteristics of seed-bearing and non-seed bearing vascular plants relative to taxonomy 3. Major vegetative structures and their modifications in angiosperms and gymnosperms	
1.1	2c	Compare and contrast leaf modifications of gymnosperms and angiosperms (e.g., needles, overlapping scales, simple leaves, compound leaves, evergreen trees, and deciduous trees). (DOK 2)	

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	Distinguish among the characteristics of botanical organization, structure, and function. (L)		
1.1	2d	Apply the modern classification scheme utilized in naming plants to identify plant specimens. (DOK 2) 1. Classification scheme used in botany 2. Classification of native Mississippi plants	
1.1	2e	Use inquiry to investigate and discuss the physical and chemical processes of plants. (DOK 3) 1. Relationships among photosynthesis, cellular respiration, and translocation 2. Importance of soil type and soil profiles to plant survival 3. Mechanism of water movement in plants 4. Effects of environmental conditions for plant survival 5. Tropic responses of a plant organ to a given stimulus	
	Demonstrate an understanding of plant reproduction.(L)		
1.2	3a	Compare and contrast reproductive structures (e.g., cones, flowers). (DOK 2)	
1.2	3b	Differentiate among the vegetative organs of monocots, herbaceous dicots, and woody dicots. (DOK 1)	
1.2	3c	Differentiate between the structures and processes of sexual and asexual reproduction in plants. (DOK 1) 1. Reproductive structures, their modifications, and the mechanisms involved in plant reproduction 2. Functions of flower parts, seeds, cones 3. Spore production in bryophytes and ferns	
1.2	3d	Explain and provide examples of the concept of alternation of generations and its examples. (DOK 2)	
1.2	3e	Categorize types of fruits and methods of seed distribution in plants. (DOK 1)	
1.2	3f	Research and compare various methods of plant propagation. (DOK 2)	
	Draw conclusions about the factors that affect the adaptation and survival of plants. (L)		
1.2	4a	List and assess several adaptations of plants to survive in a given biome. (DOK 2).	
1.2	4b	Design and conduct an experiment to determine the effects of environmental factors on photosynthesis. (DOK 3)	
1.2	4c	Explain how natural selection and the evolutionary consequences (e.g., adaptation or extinction) support scientific explanations for similarities of ancient life-forms in the fossil record and molecular similarities present in living organisms. (DOK 2)	
1.2	4d	Research factors that might influence or alter plant stability and propose actions that may reduce the negative impacts of human activity. (DOK 2)	

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	Relate an understanding of plant genetics to its uses in modern living. (L)		
1.2	5a	Research, prepare, and present a position relating to issues surrounding the current botanical trends involving biotechnology (DOK 3)	
1.2	5b	Apply an understanding of the principles of plant genetics to analyze monohybrid and dihybrid crosses and predict the potential effects the crosses might have on agronomy and agriculture. (DOK 3)	
1.2	5c	Discuss the effects of genetic engineering of plants on society. (DOK 2)	
1.2	5d	Describe the chemical compounds extracted from plants, their economic importance, and the impact on humans. (DOK 3) 1. Plant extracts, their function, and origin 2. Impact of the timber industry on local and national economy	